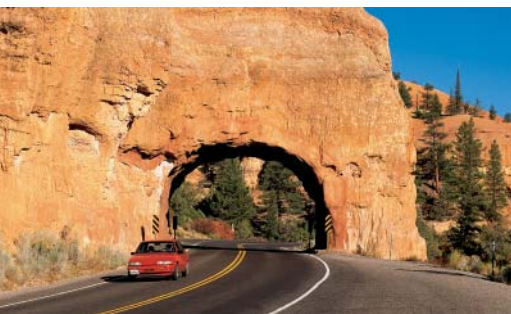


CTIP News



Federal Lands Highway • Bureau of Indian Affairs • U.S. Fish & Wildlife Service • USDA Forest Service

Welcome!

Welcome to CTIP News, the Coordinated Technology Implementation Program newsletter. We are excited to share some of the unique and innovative technologies deployed within the Federal Lands Highway (FLH) transportation system.

What is CTIP? More than 20 years ago, CTIP was established to create a forum for identifying, studying, documenting, and transferring

technologies and methodologies to the transportation community. In short, it is a cooperative technology deployment and sharing program between the Federal Highway Administration's Office of Federal Lands Highway and the Federal land management agencies. What makes CTIP so rewarding is the spirit of creativity, collaboration, and negotiation among the Federal land management agencies that participate in the program. Currently, the active participants are FLH, USDA Forest Service, Bureau of Indian Affairs, and U.S. Fish and Wildlife Service.

CTIP assists Federal land management agencies with funding for technology deployment initiatives. CTIP funding contributes to programs that empower the transportation community. Some examples of roadway technologies that have been funded through CTIP include:

- The Road Safety Audits project, which was developed to improve traffic safety and reduce fatalities on Indian reservation roads;

- The Alternative Pavements Guidelines, a how-to guide on selecting pavements for Federal Lands Highway projects;
- The Scenic Byways Guide, which offers suggestions on how to improve scenic byways and roadside facilities to increase traveler satisfaction;
- The Virtual Tour project, which allows users to view 10 different byways in 9 States using the Internet;
- The Indian Reservation Roads Board Game, which takes players through the steps of planning a transportation project;
- The Geophysics Manual, which offers cost-effective geophysical solutions to ordinary highway projects.

CTIP reaches all aspects of the transportation field, making jobs easier by creating an avenue for sharing technologies that adapt to the changing needs of the transportation community. We invite you to take a moment to read this newsletter.

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U.S. Department of Transportation
Federal Highway Administration

September 2005

Road Safety Audits Aim To Reduce Traffic Fatalities

The Road Safety Audit is an ambitious and comprehensive program aimed at reducing traffic fatalities. Motivation for the Road Safety Audit project on Indian reservation roads (IRRs) stemmed from the concern that motor vehicle crashes are the leading cause of death for American Indians aged 5 to 44. Prior to the development of this program, the Bureau of Indian Affairs (BIA) had been addressing this concern only on a case-by-case basis and with no coordinated preventive planning.

“Road safety audits are a proactive tool,” said Louisa Ward of Federal Highway Administration’s Office of Safety. According to Ward, audits are generally performed on existing or future roads or intersections by independent audit teams. Team members have various backgrounds in traffic safety, engineering, planning, design, construction, and law enforcement. Audits can be done during any phase of the construction process, and the team’s findings are often incorporated into the design.

The BIA’s Road Safety Audit project consists of:

- Data collection, including maps of all BIA routes, accident reports, safety features, growth projections, traffic counts, walkways, school routes, and new construction;
- Safety checklists, compiled during a drive-through or

walk-through at each stage, specifically midway through the planning stage, at 50 percent of design, and at 75 percent and 100 percent of completion;

- Project details such as who worked on the audit and when, and an overall description of the road;
- Problems and solutions, including concerns, detailed logical solutions, and cost estimates;
- Safety project rankings, used to prioritize and schedule all identified problems.

As a result of the BIA program, highway audit crews identified and subsequently ranked all safety concerns



on IRRs in the Northwest Region. Safety guidelines in both manual and video format are available for free on the Web. All location, curve, average daily traffic count, GPS, and reflector data collected are available on CD for use by agencies with roads connecting to the Northwest Region IRRs. Interested agencies may request a presentation on the program from the BIA, Northwest Region office, and safety videos, manuals, and presentations are readily available to managers and field personnel interested in initiating their own safety audit program.

The Road Safety Audit project has been successful in achieving its goal. Road safety audits are formally ensured, with an agency committed to auditing each IRR in the Northwest Region every 5 years. According to Ward, audits were conducted in spring of 2005 for the Standing Rock Sioux Tribe in North Dakota and South Dakota. The result was the development of a training course for tribal officials and the general public. The first course was held in June 2005, and others will be scheduled as needed. In September, the Office of Safety will publish its “Road Safety Audit Guidelines and Checklist.”

For information, contact Kyle Kitchel at BIA at 503-872-2869 (email: kkitchel@saw.net); or Louisa Ward at FHWA at 202-366-2218 (email: louisa.ward@fhwa.dot.gov).

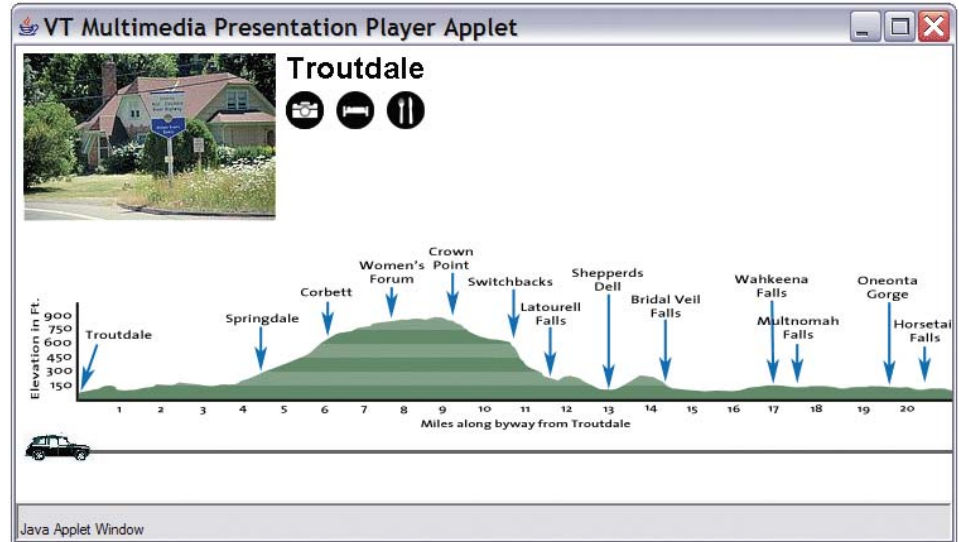
Virtual Tour Project

One of the challenges facing the byways community is helping potential travelers optimize their visits.

TerraFly, an Internet-based software developed by Florida International University (FIU), makes it possible to “fly” over vast land areas using only a Web browser. TerraScope, developed by Multimedia Data Services (MDS), artificially displays terrain from topographic data, providing a depiction of landscapes and viewsheds along a byway.

Working with FIU and MDS, the American Recreation Coalition (ARC) has combined these two technologies to create an advanced virtual tour program especially for byways. Ten virtual byways tours (in nine States: Alaska, Arkansas, Florida, Louisiana, Michigan, New Mexico, Oregon, Utah, and Wyoming) are the result of funding by a partnership of the Federal Highway Administration’s Federal Lands Highway Program, America’s Byways Resource Center, local byways, FIU, ARC, and Utah State University (managers of the www.byways.org Web site). The tours were unveiled to the public during Great Outdoors Week in June 2004.

Travelers using the TerraFly technology can look down on the terrain as if from a plane, clicking on icons at trailheads, campgrounds, visitor centers, restaurants, boat ramps, museums, and more than a dozen other categories of sites of interest.



Travelers plot the drive and any stops along the way, make reservations for dinner or overnight stays, check the byway weather forecast, and learn the byway’s history. The flight uses stored rather than real-time data, but links can be included to give visitors up-to-date information on weather, traffic, special events, and more.

After making the virtual tour, a visitor can print out a customized itinerary with directions and selected highlights via www.byways.org’s newest feature, Travel Planner. An upcoming feature is to use more color photography, as most areas are currently depicted only in grayscale. Certain aspects of TerraFly and TerraScope may require download of one-time plug-ins, and users should have high-speed Internet access. Dial-up users can take the journey with a bit of patience.

States wanting to customize a virtual tour for their own byways can do so easily. They will need:

- Place name, GPS coordinates, or exact location,
- URLs and basic contact information for linked Web sites,
- Embedded audio tracks,
- Stored images allowing visitors to rotate the view using a mouse—so-called 360 by 360 imagery.

For information, contact Sean Furniss of U.S. Fish and Wildlife Service, at 703-358-1744 (email: sean_furniss@fws.gov).

Board Game Promotes Project Planning for Indian Reservation Roads

A new and innovative exercise for transportation planners delivers training in the uncommon format of a board game. The game was developed at the Lummi Nation Planning Department in Bellingham, Washington, to enable new planners to simulate all aspects of project pre-planning. Players get experience in organizing all the interrelated parts of a transportation project, reinforcing the need for meticulous pre-planning.

As they work their way through the game, players become aware of how each project detail affects the overall end result. By the end of the game, planners should gain familiarity with how to fulfill all the Federal requirements to end up with a successful project—completed on time, on budget, and with adequate funding.

Policy makers and planning commissioners for Indian reservation roads are targeted to benefit from the game. The format of a board game was chosen rather than the more obvious use of an online tool because not all reservation offices have access to computers for training. A prototype was recently reviewed by the Bureau of Indian Affairs (BIA) with the goal of using the game as a training exercise for tribal leaders and tribal planners.

All players in the game have the same goal—to complete all the Federal requirements to get funding for a road or other building project. The



game emphasizes upfront planning, and can be generalized for all types of building projects. Depending on the project “played,” the game deals with interrelationships of the various factors involved, including environmental, funding, site selection, and sequencing of tasks.

The game is an attempt to bridge the gap between Federal requirements and understanding how to fulfill those requirements for reservation road projects. Since tribal leaders/policy makers and tribal planning commissioners fulfill difficult and time-consuming responsibilities, they are not expected, in addition, to understand the workings of the Federal Highway Administration or the BIA. The purpose of the game is not to “preach” but to provide a practical step-by-step procedure for reaching a successful outcome. By seeing how Federal regulations fit

into transportation planning, tribal planning commissioners can get projects successfully to completion.

The game shows the consequences of players’ actions as well as inactions. For instance, in securing funding for Indian reservation roads, planners must present a long-range transportation plan and a legal resolution on road ownership. If these two requirements are missing, Federal funding will not be provided.

Projects often involve the planning/building of more than just a singular structure or road. For instance, coastal tribes planning to build a marina will also need a road to the marina, and will need to coordinate an underwater survey with the land survey. All the pieces of a complex project like this can be taken into account in the game, allowing players to sample the upfront planning that is crucial to the success of the project in its entirety.

The hope is to use the game during the training sessions for new tribal council members that are conducted regularly by tribal attorneys. In another setting, the game could be used during tribes’ annual updates of reservation transportation projects, or for any new project undertaken by planners uninitiated in how to fulfill the requirements for Federal funds.

For more information, contact Kyle Kitchel at BIA at 503-872-2869 (email: kkitchel@saw.net).

New Forest Service Video To Fight Invasive Plants

Road maintenance crews have a new weapon in their training arsenal to fight noxious weeds. Developed by the USDA Forest Service San Dimas Technology and Development Center, “Dangerous Travelers: Controlling Invasive Plants Along America’s Roadways” is a new training video that helps maintenance crews recognize and control noxious weeds along the roadside. It also illustrates the key role that road maintenance crews have in preventing the spread of noxious weeds.

“Dangerous Travelers” is the culmination of a 3-year project to improve training and increase awareness about invasive plants species, said Michael Mitchell of the Forest Service. The video was produced in partnership with the Coordinated Technology Implementation Program.

“Our goal is to produce a visual guide to help road crews manage noxious weeds,” Mitchell explained. “If we can deal with the problem along the road, it will be a big step to combating noxious weeds throughout the country.”

While not as dangerous to life and property as wildfires, noxious weeds cause large environmental and economic impacts. In the western United States alone, 17 million acres, an area roughly three times the size of Massachusetts, have been taken

over by invasive species. And that figure is only getting worse. Invasive species claim an additional 4,600 acres each day, according to Forest Service estimates.

The Forest Service calculates that noxious weeds cost the United States approximately \$20 billion annually in lost agricultural income as farms, ranches, grazing lands, and water supplies are affected. Plus, these weeds threaten wildlife and the plants they depend upon for survival.

Targeting invasive species is the Forest Service’s top priority. In addition to the video, the Federal Highway Administration has produced several brochures on how to fight this epidemic, and some States are also building their own programs as well.

This video outlines the best management practices that road maintenance crews could use in the battle against noxious weeds. According to Mitchell, the types of weeds vary from state to state and region to region, but if road maintenance crews follow the recommended practices outlined in the video, a giant step will be taken in controlling noxious weeds.

For more information, contact Michael Mitchell at 909-599-1267, ext. 246 (email: mrmitchell@fs.fed.us).



Forest Service Uses High-Tech Approach to Riparian Roads Restoration Training

The USDA Forest Service's focus on repairing and restoring riparian areas has taken a high-tech turn with its new, multimedia "Riparian Roads Restoration Guide." The interactive CD-ROM contains video and PowerPoint presentations on caring for and improving riparian areas.

Riparian areas are ecosystems adjacent to bodies of water such as rivers, streams, and lakes. The guide offers tips on how to care for these ecosystems and the accompanying fish habitats through proper management of roads. In addition to the CD-ROM, the guide is also available as a field pocket guide. While both formats cover the same information, they are packaged and distributed separately. Ten experts, ranging from civil engineers to biologists and hydrologists,

present such topics as riparian vegetation, invasive species, and road surface drainage. Each topic is presented in video format, depicting footage of the expert narrating the presentation, and is accompanied by slides showing text talking points and relevant charts, photos, and maps.

The interface is user-friendly and intuitive, using full-color images to represent the various topics covered (a photo of turtles by a roadside links to the presentation on wildlife migrations, for example). The CD-ROM opens up to a nine-panel grid, each grid displaying a headshot of one of the experts. Holding the mouse over a headshot will bring up the identity of the expert or the topic of the presentation.

The National Riparian Roads team currently consists of U.S. Forest Service personnel and one representative from the U.S. Environmental Protection Agency. The team was formed in 1999 and has conducted several training workshops over the last few years to increase awareness of the impacts to riparian areas from roads. The Forest Service's National Service Center for Technology and Development in San Dimas, California, decided to publish the guide in both pocket guide and CD-ROM formats as a means to share the team's experience on the care of riparian areas.

"We're finding new ways to communicate, and with the help of this technology, we hope to reach a wider audience and convey the information more efficiently and effectively," said the Forest Service's Greg Napper.

The guide, which has been in production since 2002 and is scheduled for release in fall of 2005, will be distributed to all participating CTIP agencies, such as the Bureau of Indian Affairs, USDA Forest Service, Federal Lands Highway, National Park Service, and U.S. Fish and Wildlife Service.

For more information, contact Greg Napper of the Forest Service at 909-599-1267, ext. 290 (email: gnapper@fs.fed.us).



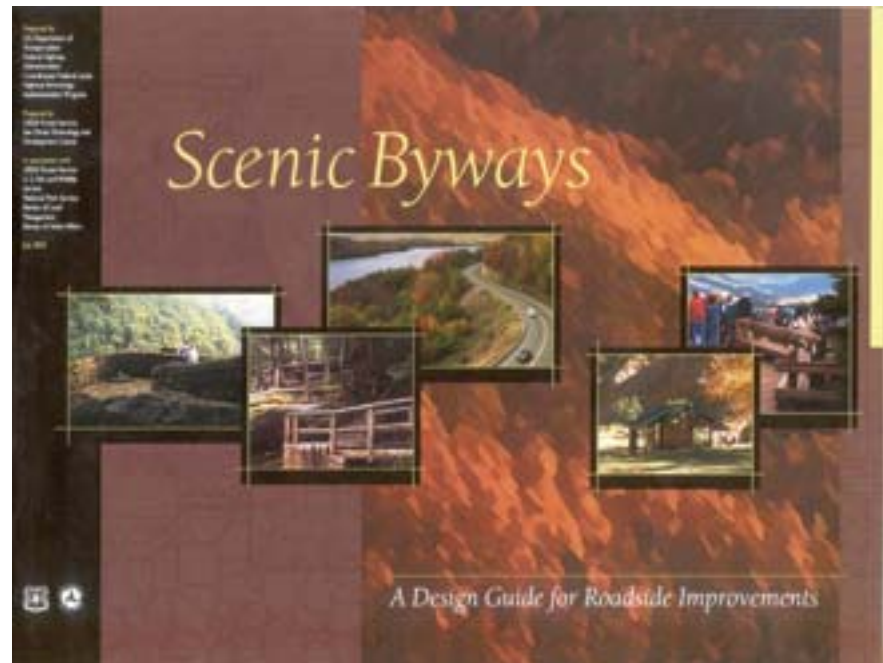
Guide Offers Improvements for Scenic Byways

Recreational driving through national parks and national forests has become a major American pastime. To recognize this important use of Federal lands, a multi-agency effort has begun to manage these scenic byways to complement and enhance the travel experience.

“Scenic Byways: A Design Guide for Roadside Improvements” was published in October 2002 by the USDA Forest Service San Dimas Technology and Development Center in association with the U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management (BLM), and Bureau of Indian Affairs. This publication was created to assist the planners, designers, and managers of scenic byways in the design of roadside improvements that compliment the byway’s unique natural character and cultural history.

“If you’re inviting the public to the byway, adequate facilities are essential, such as overlooks, informational kiosks and signs, restrooms, and trailheads to name a few,” said Alan Yamada of the USDA Forest Service. “The guide gives planners and designers ideas and suggestions to provide visitors a safe and enjoyable experience.”

The guide is divided into five parts: scenic byways programs, planning, design considerations, visitor facilities, and roadway improvements.



The design and planning process is outlined from establishing a relationship with the local community to designing facilities and features.

The Forest Service’s National Forest Scenic Byways Program and BLM’s Back Country Byways Program are among the programs to recognize and promote these special routes. “Scenic Byways” supports these programs by suggesting byway planning needs and design considerations for the development and construction of visitor facilities and roadway improvements. The guide emphasizes the need for good planning to maintain and enhance the byways’ intrinsic qualities and to provide visitors with a quality experience. Providing a quality experience requires a care-

ful analysis of visitor needs, potential use patterns, resource access and protection, facility operation, and aesthetics.

The guide includes many photos and illustrations of examples of well-designed visitor centers, overlooks, kiosks, and picnic areas. The guide is a vital resource to the planning process and design considerations behind the creation of facilities that are integrated into roadways and landscapes that enhance the experience of driving for pleasure.

For more information, contact Alan Yamada of the Forest Service at 909-599-1267, ext. 224 (email: ayamada@fs.fed.us).

Videos Demonstrate Environmentally Responsible Road Maintenance

The USDA Forest Service San Dimas Technology and Development Center (SDTDC) has released a five-part video series on environmentally responsible road maintenance. The series was developed to provide maintenance guidelines for equipment operators and contractors working on national forest roads, with a focus on environmentally sensitive ways of maintaining low-volume roads.

According to Alan Yamada of the Forest Service SDTDC, the videos “provide a visual guide for equipment operators on how to maintain roads and reduce the impact roads have on the environment.”

Video 1, “Forest Roads and the Environment,” provides a visually pleasing overview of how the road and environment interact with each other. The video is an introduction to maintenance of low-volume roads and highlights the benefits of proper maintenance activities.

Video 2, “Reading the Traveled Way,” instructs the viewer on how to quickly identify what the road is “saying.” This segment focuses on understanding the condition of the traveled way and provides insights on how to proactively avoid costly repairs by properly diagnosing the problem. Viewers will find infor-

mation on topics such as wheel ruts, washboards, potholes, surface materials, surface cross drains, cattle-guards, bridges, and ford crossings.

Video 3, “Reading Beyond the Traveled Way,” demonstrates that in order to properly maintain roads operators need to understand what is happening beyond the road surface. Considering the natural hydrologic, geomorphic, and biologic functions before beginning maintenance operations can help minimize significant impacts to the road and surrounding environment. Topics include gullies, slumps, and brush removal.

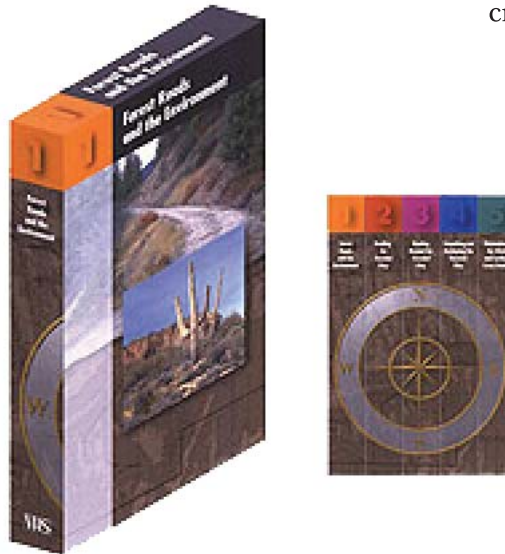
Video 4, “Smoothing and Reshaping the Traveled Way,” covers the step-by-step process used for smoothing and reshaping a road. Topics include

crowned roads, insloped roads, outsloped roads, and transition sections.

Video 5, “Maintaining the Ditch and Surface Cross Drains,” provides comprehensive instructions for correctly constructing and maintaining ditches, culverts, and various surface cross drains. Topics include heeling the ditch, pulling the ditch, maintaining surface cross drains, rolling drain dips, earthen water bars, and open-top drainage devices.

“Forest Roads and the Environment,” won the Forest Service Chief’s Award for Excellence in Technology Transfer, was a finalist in the 24th annual Telly awards, and received the Communicator Award for video/film/multi-media productions. The videos are currently available in VHS format and will be available on DVD by the end of 2005.

For more information, contact Alan Yamada of the Forest Service at 909-599-1267, ext. 224 (email: ayamada@fs.fed.us).



Guide Assists With Traffic Sign Installation

To ensure proper installation of road signs on National Forest roads, the USDA Forest Service Missoula Technology and Development Center produced the “Sign Installation Guide.” Released in July 2003, the guide provides a quick visual reference for field personnel charged with installation of the signs and markers most often used on Forest Service roads.

“Our original intent of the guide was to develop a visual aid to help volunteers and contractors with the placement of these signs,” said Andy Trent of the Forest Service.

Targeted at Forest Service personnel, volunteers, and contractors, the guide is illustrated with detailed photos of various signs featuring their specific placement. Each photo shows how high and how far from the roadside each sign should be located.

In addition to general guidelines, specific instructions are listed for:

- Wooden breakaway sign supports,
- Post spacing and size requirement,
- Advance sign placement distances,



- Typical marker installations,
- Orientation angles,
- Delineator details.

Small enough and sturdy enough to be stored in the glove box of a vehicle, the guide is wire-bound and allows for easy usage in the field. The guide was written in accordance with the guidelines found in the “Manual on Uniform Traffic Control Devices” and the “Forest Service Sign and Poster Guidelines.” The guide is designated for signs on low-volume roads, such as dirt roads and campground roads.

Because the guide is easy to transport and the instructions are straightforward, it is expected that personnel will encounter little difficulty in complying with the standards for installation. Although the guide was designed for the Forest Service, copies have been requested by the National Park Service, Bureau of Land Management, and State agencies.

For more information, contact Andy Trent of the Forest Service at 406-329-3912 (email: atrent@fs.fed.us). To order, contact Cailen Hegman of the Forest Service at 406-329-3978 (email: cahegman@fs.fed.us).

Alternative Pavements Guidelines Ease Project Planning

Recently, Central Federal Lands Highway Division (CFLHD) has developed Federal Lands Highway (FLH) guidelines for alternative pavement selection as a new resource for project development teams facing a context-sensitive pavement project.

According to Mike Voth, project lead, the guidelines will document the attributes of the various surfacing alternatives. “Federal Lands’ customers, as well as communities, environmental organizations, and individual landowners, are increasingly concerned and even disputing the pavement type selection for proposed projects,” Voth said. “Before these guidelines, our design teams didn’t have a process for selecting context-sensitive surfacing. There were plenty of guidelines for selecting pavements based on performance parameters, but nothing that considered aesthetic and environmental parameters.”

The guidelines were inspired by a recent project to reconstruct the Guanella Pass Road west of Denver, CO. “The stakeholders were very concerned about the pavement fitting into the rustic context of the surrounding area,” Voth said. “To address their concerns, a number of test strips with different surfacings were constructed for the stakeholders to inspect and comment on. But this solution required a significant amount of time and effort, and we realized that guidelines, and an accompany-

ing packet of photos, charts, and descriptions, would make the selection process much more efficient.”

The project has been more than a year in development, Voth said, and began with contracting out a four-task project. A cross-divisional technical advisory panel was formed to assist the contractor during the project and review all the recommendations. First, the consultant conducted a literature review and investigation to determine pavement types that are applicable for low to medium volume roads. According to Voth, the review focused on the more unconventional pavement types. Next, a pavement type selection process was developed.

Third, a CD-ROM and paper brochures were developed to show customers the various types of surfacing alternatives, list the pros and cons of each, and summarize the pavement selection process. Finally, this information was rolled into the final guidelines and supplementary materials. The final result will include a 200-300 page “catalog” of various pavement options, supplemented with a photo album of more than 100 images of pavement types.

Developing the guidelines did present challenges and surprises along the way, Voth said. “The reason for



the literature review was to find out ‘How many surfacing types are out there?’ We did discover a handful that we had never heard about before,” he continued. “But the biggest challenge was the fact that this was new territory for us. As an engineer, I was trained to evaluate pavement solutions based on performance parameters.”

The guidelines will be presented to all three FLH divisions, Eastern, Central, and Western, with each division determining how to best implement and use the document. A Web version is also available at: <http://www.cflhd.gov/geoTechnical/index.cfm>, and the guidelines can be used by all partner agencies including Bureau of Indian Affairs, U.S. Fish and Wildlife Service, and USDA Forest Service.

For more information, contact Mike Voth of FHWA at 720-963-3505 (email: michael.voth@fhwa.dot.gov).

Geophysics Manual Leads the Way

Engineers and highway planners have a new resource available for applying geophysical techniques to transportation projects. Under a contract from the Central Federal Lands Highway Division (CFLHD), Blackhawk GeoServices has developed a 742-page manual entitled “Application of Geophysical Methods to Highway Related Problems.”

According to Khamis Haramy, a geotechnical engineer for CFLHD, this document is unique in its application of geophysical techniques to transportation-specific problems and solutions.

“As technology advances, geophysics is becoming more and more attractive to transportation engineers for its ability to provide results in near real-time,” Haramy explained.

The project began when Haramy was asked to give presentations on geophysical methods at regional geotechnical meetings. His strong background in geophysics quickly made him the point of contact for colleagues in State departments of transportation and Federal land management agencies with questions on applying geophysical techniques to transportation projects. These inquiries became so frequent that Haramy recognized the value in having a resource on hand to address the topic.

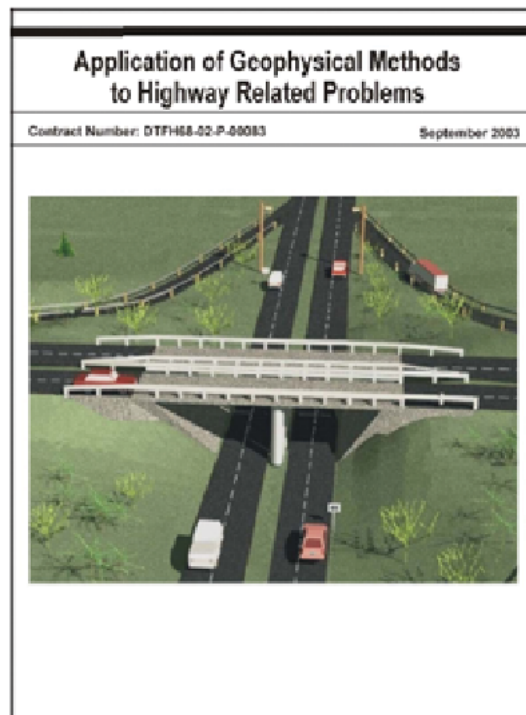
Working in conjunction with Blackhawk GeoServices, Haramy

was assigned as the project lead responsible for reviewing and organizing the material as well as developing a template and format for the manual. The project took 2 years to complete.

“The challenge in creating this manual was to capture the broad knowledge of geophysical techniques available in the field, incorporating as many perspectives as possible,” Haramy said. “I reviewed the material very closely to prevent it from favoring any one source or company.” To assist him in ensuring an impartial treatment of geophysical methods, three other geophysical experts were also consulted.

“We also strove to keep the focus on engineering solutions, using geophysics as a tool to that end,” Haramy said. The document is divided into two parts. The first part is problem oriented and provides a range of geophysical methods that can be used to solve particular highway related problems. The second part provides more comprehensive discussions of the geophysical methods and theory.

The manual has inspired the Federal Highway Administration Resource Center to develop a 1.5-day workshop on geophysical methods. The workshop materials will be designed



for an audience that is more familiar with transportation applications and less familiar with geophysical methodologies and theories.

For the future, Haramy and CFLHD have no immediate plans for updating the manual, although the topic has been discussed. Approximately 5,000 copies of the manual have been printed. The manual is available online at www.cflhd.gov/geotechnical.

For more information, contact Khamis Haramy of FHWA at 720-963-3521 (email: khamis.haramy@fhwa.dot.gov).

Continuing Education for Project Engineers

Just in time" learning is an opportune tool for project engineers, especially those on field deployments and working compressed time schedules. Continuing education CDs break away from traditional manuals and provide interactive training that allows engineers to review material onsite at their convenience in a user-friendly and portable format. In addition to providing for the printing of forms and access to information for specific activities as needed, the materials also offer a significant savings of time and cost over traditional classroom training.

Three CDs currently available are:

- Introduction to the Inspection of Ground Anchors and Soil Nails,
- Inspection of Ground Anchors,
- Endangered Species Act: Build Smart.

"Introduction to Inspection of Ground Anchors and Soil Nails" is recommended as a 30-minute review and introduction to the more thorough presentation in "Inspection of Ground Anchors."

In addition to the in-depth (2-hour) instructive training, "Inspection of Ground Anchors" provides user comprehension testing and access to anchor installation forms at www.fhwa.dot.gov/bridge/anchor.

"The Endangered Species Act: Build Smart" CD is a two-disk set. Disk 1 provides an introduction to the Endangered Species Act along with instructions on compliance and individual responsibilities under the act. Disk 2 addresses construction issues under the Endangered Species Act and presents two case histories and supplemental resources for protecting endangered fish and fish habitats.

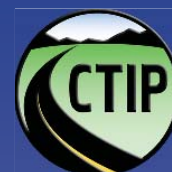
All training material is designed to be appropriate for project engineers, highway construction inspectors, and contractor staff. Material is presented in an interactive format that combines narration, video clips, expert opinions, and process animations.

Two additional training CDs due out soon are "Inspection of Soil Nail Walls" and "Cold Regions Design." For future training materials, an automated evaluation form is planned that will allow the user to send feedback directly to Portland State University, where the CDs are produced.

Development of this training material was funded by the technology deployment program of Federal Lands Highway Western Division. For more information, contact Rich Burrows at 360-619-7704 (email: rich.burrows@fhwa.dot.gov). To order, contact Amit Armstrong at 360-619-7668 (email: amit.armstrong@fhwa.dot.gov).

For a complete list of CTIP projects, please check the CTIP Web site at:

www.fhwa.dot.gov/flh/ctip_projects.htm



Notice

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Publication No. FHWA-FLH-05-003